

# Tucson Electric Power and UNS Electric

## 2016 Summer Preparedness

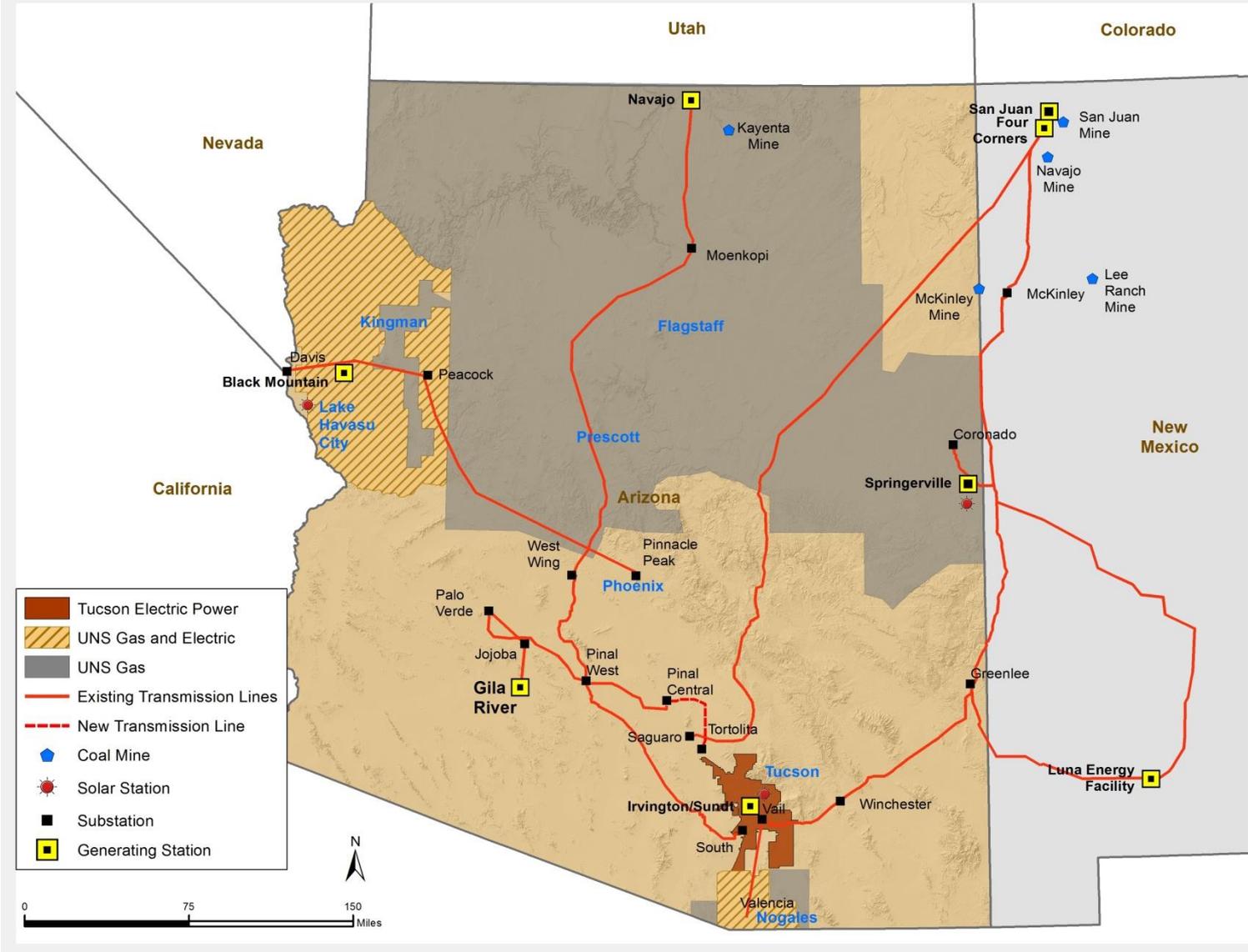
**Sam Rugel**

Director, System Control & Reliability

April 28, 2016



# Utility Service Areas

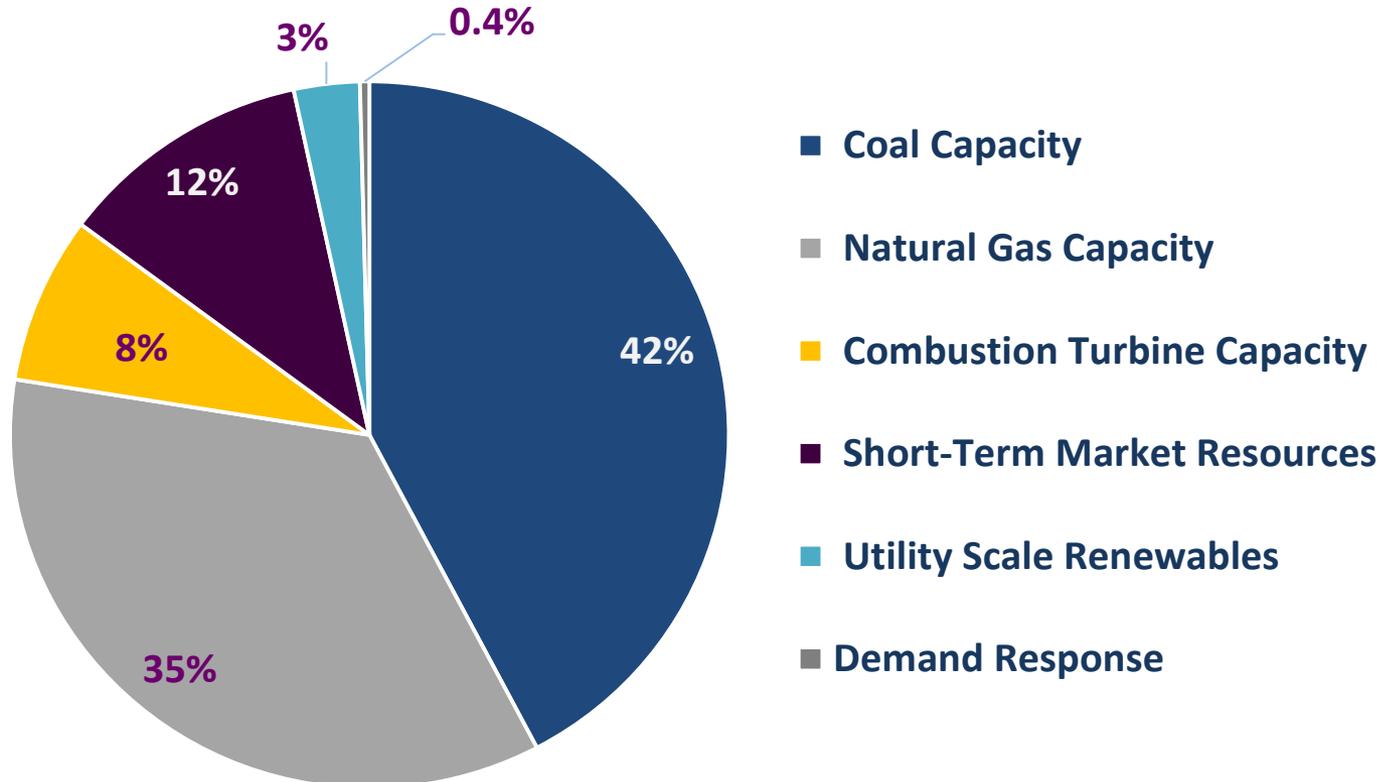


# Service Statistics

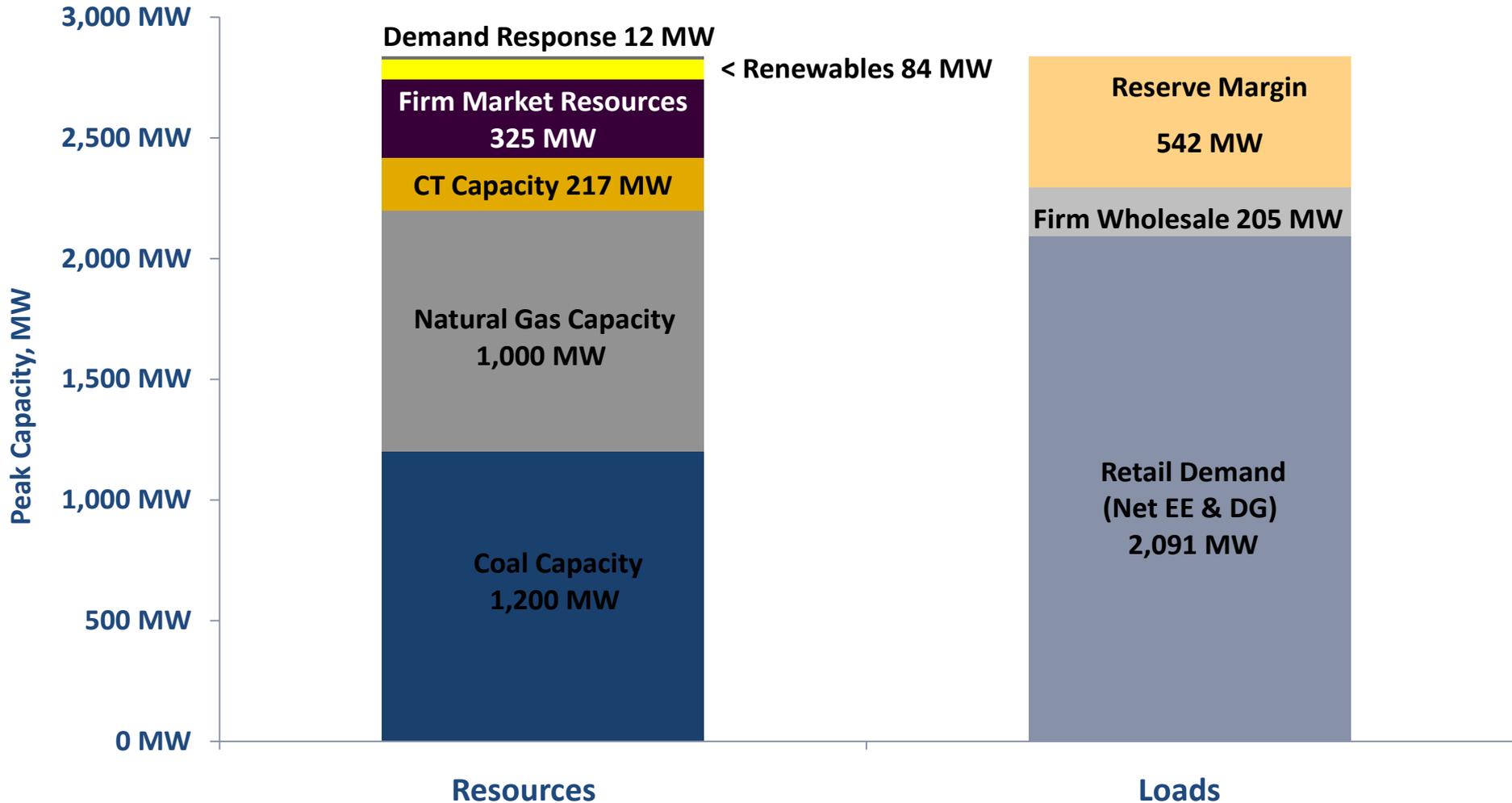
	<u>TEP</u>	<u>UNSE</u>	
Service Area (Sq Miles)	1,155	8,056	
Population	1,010,000	250,000	
Customers:	417,000	93,000	
Counties	2	2	
Substations	106	40	
Transmission Line Miles	1929	339	
Distribution Line Miles	7046	3672	
Generator Units	22	7	

# TEP 2016 Resource Capacity

Total Resource Capacity – 2,838 MW



# 2016 TEP Loads & Resources



Note: EE and DG offset peak demand by approx. 58 MW. Renewables reflect capacity coincident to system peak.

# TEP and UNS Electric Fuel Supply

## TEP Fuel Supply

### Coal

- Current and future coal inventory will meet the projected 2016 requirements.
- Any source or delivery issues will be mitigated by on-site inventory management.

### Natural Gas

- Gas transportation agreements with El Paso and Transwestern will meet the projected 2016 requirements.
- Variations in demand and/or delivery issues will be addressed through monthly and daily purchases.

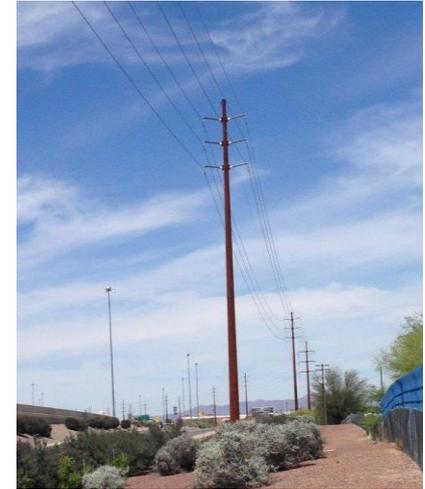
## UNS Electric Fuel Supply

### Natural Gas

- Gas transportation agreements will meet projected 2016 requirements
- Gas transportation for Gila River Unit 3 on Transwestern and El Paso is procured by TEP and then allocated to UNSE
- Transportation on Transwestern (for Black Mountain Generating Station) and El Paso (for Valencia turbines)
- Variations in demand and/or delivery will be addressed through monthly and daily purchases

# TEP - System Reliability Enhancements

- Pinal Central to Tortolita 500 kV project
  - Enhance system reliability
  - Expand import capability
- Series Capacitor Replacements
- 138kV Re-conductor projects
- EMS Upgrade
  - more secure and reliable platform to meet CIPv5 compliance
  - increased situational awareness with alarm/TREND buffering



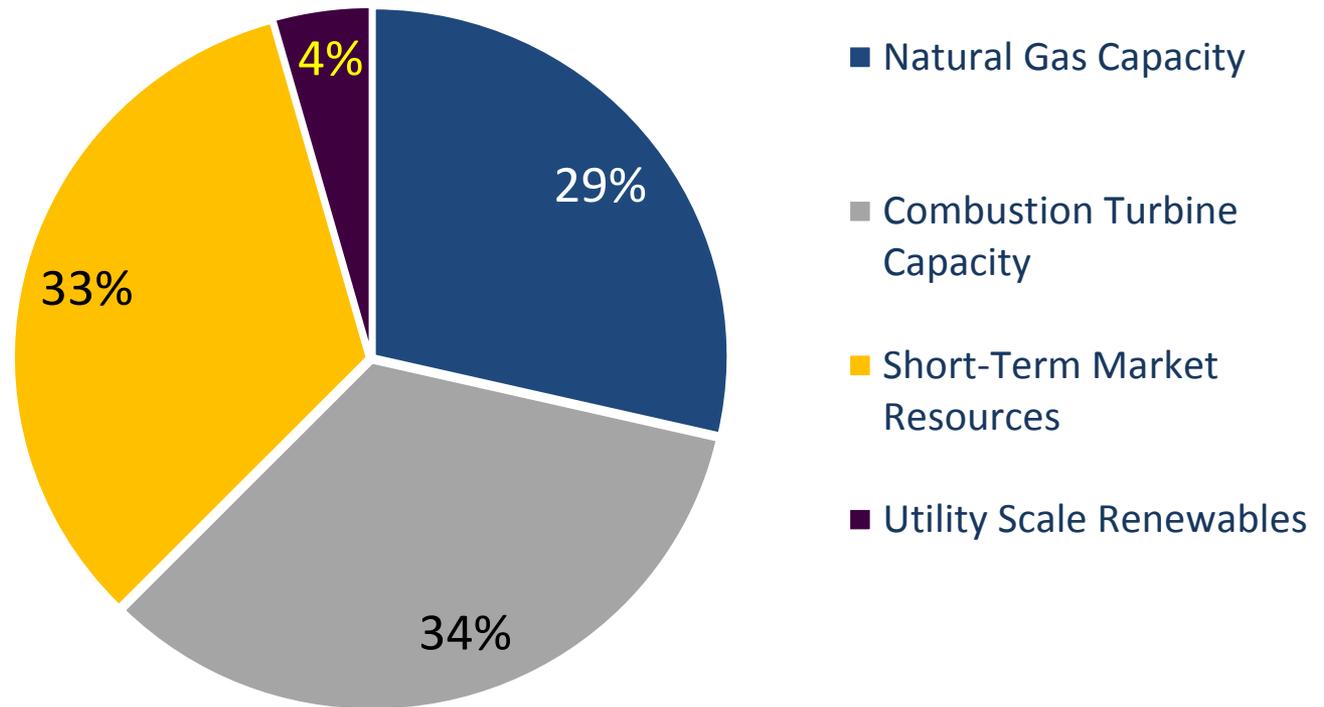
# TEP Emergency Equipment Availability

- **Emergency Equipment**
  - Emergency Towers
    - Restoration Kits - (4) 4-pole emergency structures plus (2) hardware kits
    - 10 spare 345 kV towers
    - 8 spare lattice structures of various sizes
    - 1 spare 345 kV monopole
- **Spare Poles (46 kV and 138 kV Class)**
  - 70+ poles capable of supporting 46kV through 138kV loading and framing
  - Common standard allows use of structures for Mohave, Tucson, and Santa Cruz
- **Mobile / Portable Transformers (138/115/46kV)**
  - One 25 MVA – (138kV or 46kV)/14kV or 4kV
  - One 40 MVA – (138kV or 115kV)/14kV
    - Shared with Santa Cruz
  - One 100 MVA – (138kV/46kV/14kV or 7.2kV)
- **Spare Transformers (138/46kV)**
  - One 138/14 kV (30/40/50 MVA)
  - Two 46/4 kV
  - Four 46/14 kV

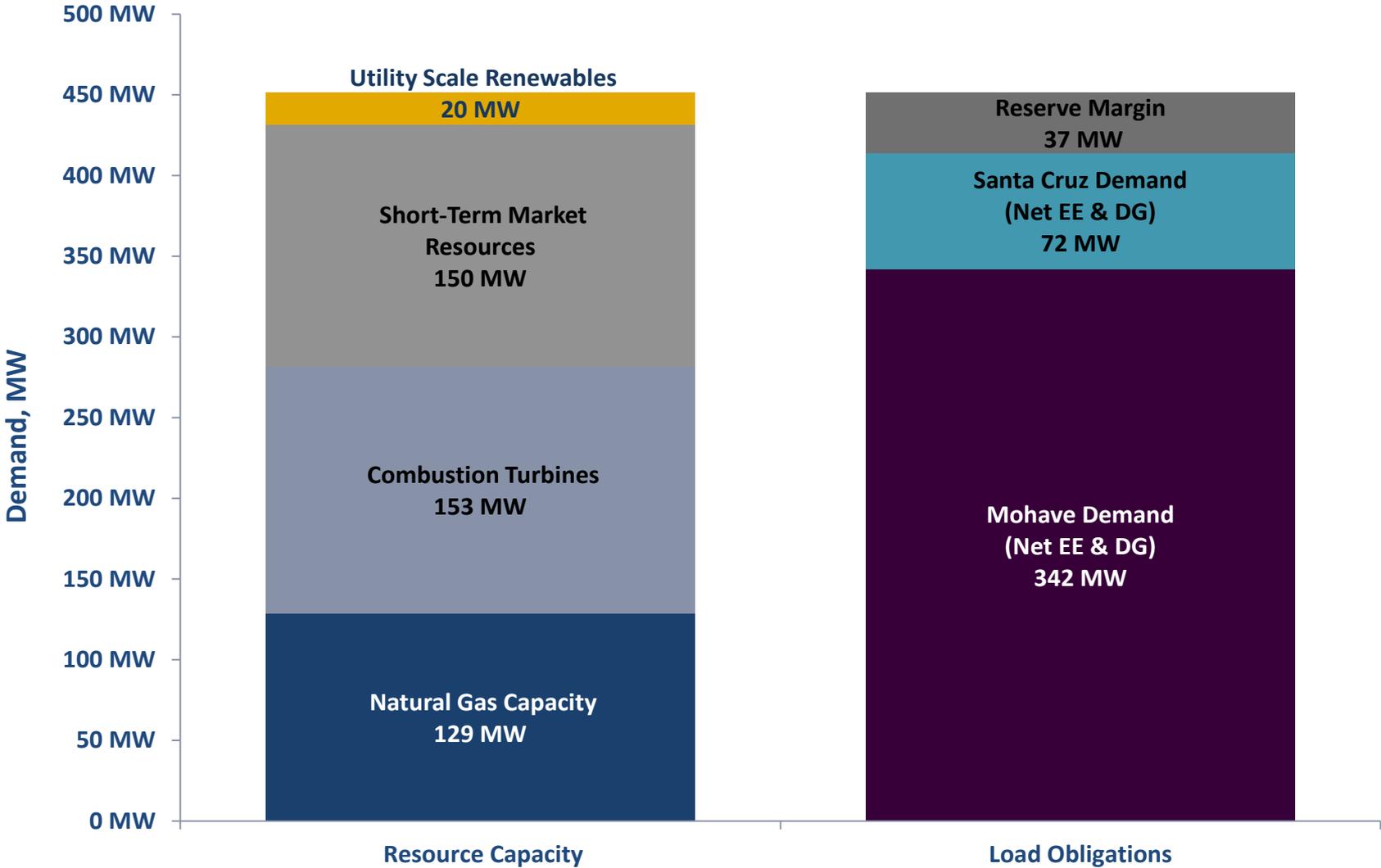


# UNS Electric 2016 Resource Capacity

Total Resource Capacity – 451 MW



# 2016 UNS Electric Loads & Resources



*Note: EE and DG offset peak demand by approx. 8 MW. Renewables reflect capacity coincident to system peak.*

# UNS Electric Emergency Equipment Availability

## Mohave - Emergency Equipment

- Mobile 69/13.2 X 20.8 X 12 kV Transformer
  - 25MVA Dual Distribution Voltage Mobile
- 20 spare 69 kV poles

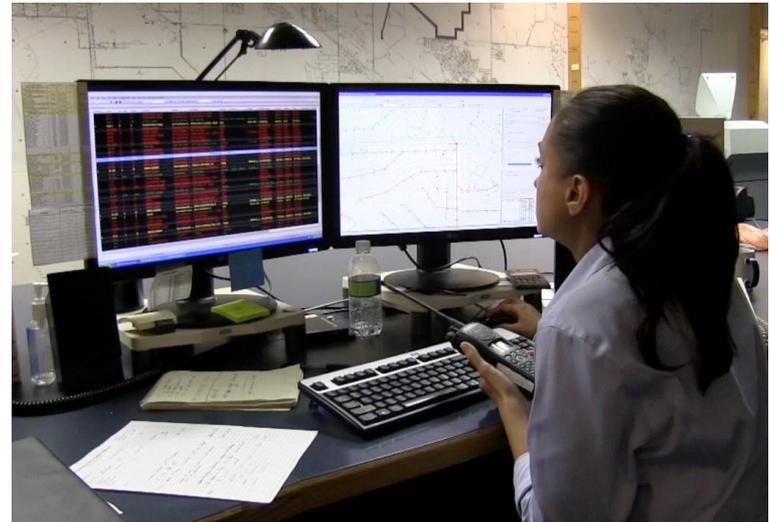
## Santa Cruz - Emergency Equipment

- Spare 40 MVA transformer shared with TEP
- Spare poles provided by TEP



# TEP & UNS Electric Operations

- Regional black start drills between Balancing Authorities and the Reliability Coordinator are completed for the year
- Verification of TEP's Backup Control Center (BCC) readiness scheduled prior to summer
- Weekly check of BCC systems
- Daily conference call between Reliability Coordinator and Balancing Authority operators to review system conditions
- During summer peak AZ entities anticipate holding weekly reliability call
- Weekly updates from Transmission Construction & Maintenance regarding wildfires that may impact TEP facilities



# Outage Communications

## Communications

- Prominent presence on TEP.com and UESAZ.com
- TEP and UNSE outage map updated real time
- Facebook & Twitter updates 
- Automated customer call-backs on restoration progress
- Recorded phone message
- Call center staff available 24x7
- Customer Mobile Application – Fall 2016

## Media updates

- “News Line” recordings
- 24x7 access to media relations staff
- Local media very attentive to even modest outages, particularly during monsoon season

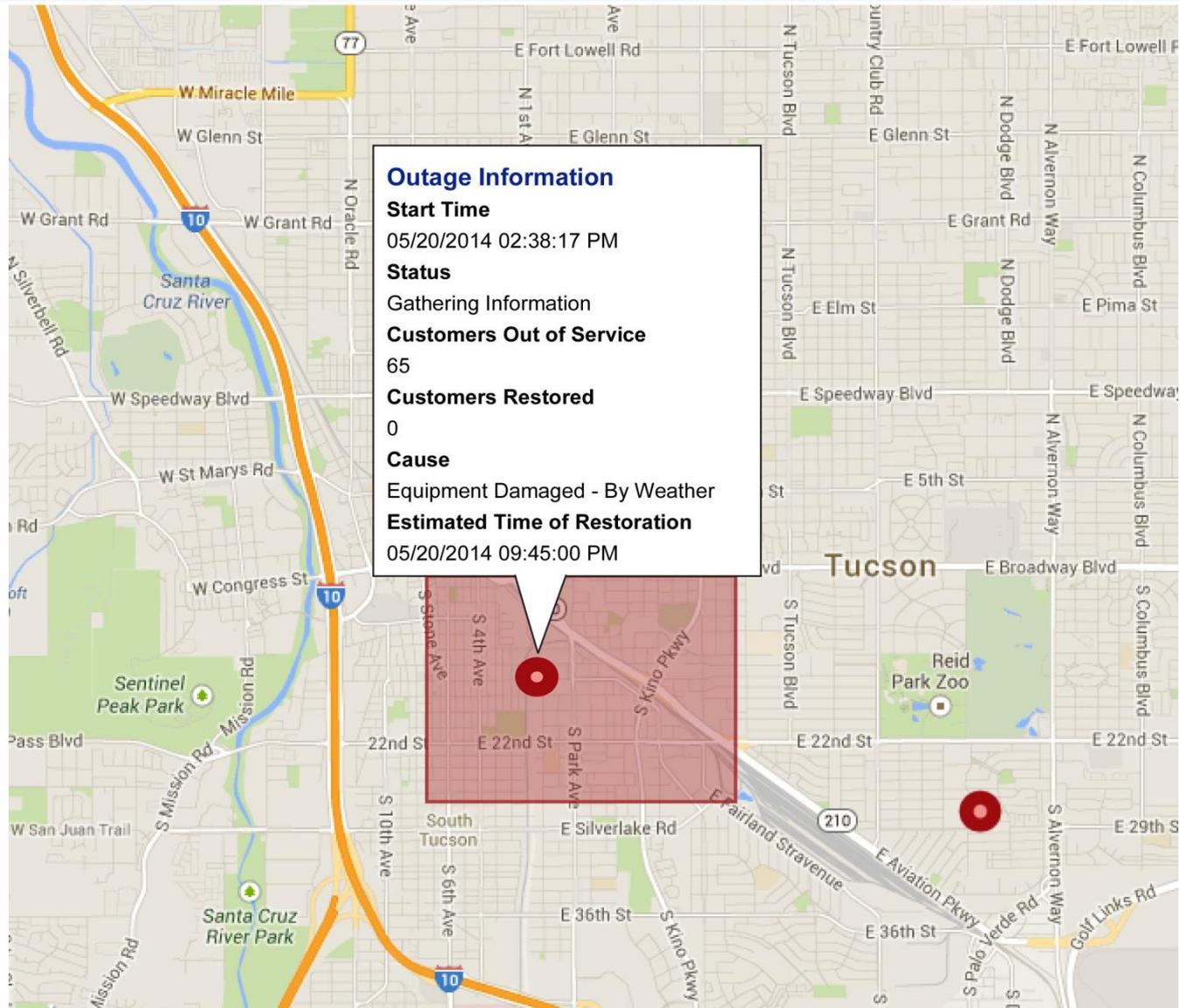
## *Critical Outages*

- Press release; press conferences; customer outreach, as needed
- Coordination with state, local Emergency Operations Management officials
- Advance notice of scheduled curtailments
- Coordinated relief efforts



Customer Care

# TEP Outage Map



# TEP & UNS Electric Summer Preparedness

- Sufficient generation and transmission resources available to meet anticipated loads
- Sufficient firm gas transportation to meet gas generation requirements
- Reliable transmission & distribution systems with adequate capacity
- Operational testing conducted; summer system operations plans in place
- Equipment available to respond to emergencies
- Emergency response plans in place to respond quickly and efficiently
- Experienced staff (15 yrs.) and System Operators (14 yrs.)

